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ABSTRACT

This monograph presents analyses of some of the factors that impinge upon the quality of schooling in California. The first section addresses teacher certification and professional standards; it touches briefly upon the matter of raising teacher salaries and improving teacher career structures. The teacher's role in classroom quality control is considered in section two. Findings are presented from studies on teacher behavior and pupil progress and students' involvement with the learning process. In the third section, the selection of teachers is discussed within the framework of the decline of teacher quality and state approval of teacher education programs. The state's role in assuring teacher academic competence is considered with recommendations on examinations for teacher candidates and entrance requirements for teacher education programs. The fourth section examines state policy in the preparation of teachers with recommendations on restructuring schools of education and facilitating the entry of first year teachers. The final section explores how to retain good teachers in the classroom. Five recommendations for improving teacher preparation programs and the teaching profession are offered. A four-page bibliography concludes the document. (JD)

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SOME REFLECTIONS ON THE HONORABLE PROFESSION OF TEACHING

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This is a PACE Project sponsored paper. PACE, Policy Analysis for California Education, is a joint undertaking located at the University of California, Berkeley and Stanford University. Its Directors are James W. Guthrie and Michael W. Kirst. PACE is funded by The William and Flora Hewlett Foundation. However, the analyses and recommendations contained in this paper are not necessarily endorsed either by the Hewlett Foundation or the PACE directors.

I. Introduction

During the past decade there has been an unprecedented decline in confidence in the California public schools.(Field, 1981) Public and politicians alike are concerned about declining test scores, increasing numbers of high school drop-outs, and semi-literate and -numerate students entering the universities and the work-force. A number of recent reports (National Commission on Excellence in Education, 1983; Boyer, 1982; Gallup Poll, 1982) indicate that both professionals and the lay public subscribe to the view that public schools should focus on improving academic standards. "Back to basics" and "No frills education" are the rallying cries of this movement. In fact, however, it will be difficult to take students back to basics when many teachers have not mastered the basics themselves. (Commission on Teacher Credentialing, 1983) How can an elementary school teacher who is unable to pass a test of basic skills in reading and arithmetic help students achieve high standards of literacy and numeracy?

The current system of training and certification does not adequately screen teacher candidates or offer them the opportunity to develop a high level of professional skill. The salary or career structure does not offer able individuals the incentive to take up classroom teaching as a long-term career. The fact that there *are* excellent teachers in California classrooms owes more to the personal dedication and altruism of such individuals than to the design of the education system.

During the next decade many of the state's most able and experienced teachers will retire (Smith, 1983b), and others will move into administration (Lortie, 1975) or other professions (Charters, 1970). There is an urgent need *at this time* to raise professional standards and improve career opportunities so that these positions are filled by highly qualified teachers. Teachers are the lynchpin of the education system; student learning depends on effective teaching. We are unlikely to observe a marked improvement in student attainment until we restructure the teaching profession to attract and retain the most able candidates.

A. Certification and Professional Standards

The state has not established rigorous standards to evaluate individuals seeking to enter the teaching profession. Under the "Approved Program" method of certification, *the state approves programs, not personnel.* The responsibility to approve teacher candidates has been delegated to the institutions of teacher training. The recent high failure rates among both experienced and student teachers on the California Basic Education Skills Test (CBEST), as published by the Commission on Teacher Credentialing (1982-1983), leads one to question the effectiveness of such institutions. Programs of teacher preparation are not highly selective in their intake (Brubaker, 1976; Watts, 1980) and student teachers tend to be among the least able of the university population (Impact, 1982). The programs themselves are not comparable in length or rigor to those of most recognized professions, student teachers spend less time in professional studies than any profession or semi-profession (Denemark and Nutter, 1979). Few students fail, and virtually all of those who graduate are recommended to the state for certification. Graduation from an accredited teacher preparation program in California is a virtual guarantee of certification.

This is not the case with other professions. For example, the state establishes rigorous standards for lawyers. In 1982 the state bar received over 12,300 written exams and granted acceptance to slightly more than 5,100, a pass rate of 41 percent. Compare this to the Commission on Teacher

Credentialing. In 1983 it reviewed a total of 114,000 applicants for teaching credentials and granted credentials to 97,000 individuals, an acceptance rate of 85 percent. These figures can be taken to reflect the different standards and procedures used by the state to approve these two groups of professionals. For lawyers, state licensing is independent of a law degree; an individual must have gained a law degree before applying for admission to the bar, but such a degree is not itself sufficient for admission. As the figures above demonstrate, being admitted to a particular law school and meeting its requirements are no guarantee that one will be able to practice law in California. The state sets its standards in the form of the bar exam.

The same is not true, unfortunately, of the teaching profession. In education, completing a teacher preparation program is more or less synonymous with gaining a teaching credential. Under the "Approved Program" route schools of education recommend their graduates for certification and the state simply rubber stamps them. These departments, always concerned about enrollment and constantly competing for students, are unlikely to inflict high failure rates on themselves. This hardly seems the most effective method of ensuring quality control in the profession. This paper argues that in order to improve the quality of new entrants into the teaching profession, the state should dispense with the "Approved Program" method of certification and establish independent professional standards for teachers.

B. Raising Salaries

Raising certification standards will enhance the prospect that better quality candidates will enter the teaching profession. It will not ensure that we retain good teachers in the classroom, however, unless we improve the reward structure of the profession. Declining confidence in the public schools has manifested itself in an unwillingness on the part of the tax-paying public to improve the pay and working conditions of teachers. Excellence often goes unrewarded and unrecognized. In recent years teachers' pay has declined relative to other professions (N.E.A., 1982). Entry-level teachers receive salaries that are among the lowest of any profession, and this is exacerbated by the fact that the salary structure is "front-loaded", each pay increase representing a smaller percentage of the salary base than the preceding increment. (Lortie, 1975) The relative rewards actually decrease with experience and, as James Guthrie points out, most teachers reach the top of their salary scale by age 35 (Guthrie, 1983). The only way to move up is to move out of the classroom into administration or evaluation. Senate Bill 813 --- referred to as the "education reform bill of 1983" and sponsored by California State Senator Gary Hart (no relation to the Senator from Colorado) and Representative Theresa Hughes --- has addressed the issue of entry-level salaries in California, by mandating a substantial increase (to $18,000 in three years). This increase, however, does not restore entry-level salaries to their 1960 position (Guthrie and Zusman, 1982). An increase in entry-level salaries may help attract better candidates, but they will not be retained unless remuneration throughout one's career is improved.

C. Improving Career Structure

Improving salaries, however, is not the total answer. As Kerr (1983) points out, even if teachers were uninterested in Salaries, the nature of teaching, as it is presently structured in the schools, would drive the best away. Teaching as a profession offers no incentives, in the form of increased responsibilities and commensurate status for those who want to perfect their abilities and excel in the craft of classroom teaching. She concludes, "The fact that some exceptionally able teachers appear and remain in classrooms reflects.... heroic

commitment and extraordinary sacrifice.... and not the wisdom of our institutional arrangements".

In her testimony before the Assemble Education Interim Committee (1983), Anne Reynolds, Chancellor of the California State University, asserted that we must make the teaching profession more attractive in terms of salaries and career structure. "Real improvement in our schools will only occur when teaching as a profession is restructured and conceived so as to attract and retain persons with the ability and the motivation to be truly effective teachers and professional leaders in our society". She points out that the traditional incentives that once ensured an adequate supply of teachers are gone. Most conspicuous is the existence of alternative career opportunities for women and minorities, many of whom choose more remunerative careers in law, medicine or business. Teaching is no longer the "good job" that it once was. If we are to raise academic standards in California, we must make education an attractive profession once again.

Today, in California, we are at a critical juncture with respect to education. California is predicted to need between 90,000 to 190,000 additional teachers between 1984 and 1991 (Brott, 1984; Smith, 1983b). The state will have to replace a minimum of 50 percent and as many as 75 percent of the teaching force. ***Seventy-seven million**** students could pass through the classes of these new teachers. The state has an opportunity to ensure that all these children receive the best possible teaching. This paper offers recommendations as to how the State of California could improve the quality of teaching in its schools. We suggest changes in three main areas: certification, professional training, and career structure. These recommendations are discussed extensively below.

II. The Teacher's Role in Classroom Quality Control

A study commissioned by the California Commission for Teacher Credentialing, **Time to Learn** (Denham and Lieberman, 1980) came to the seemingly obvious conclusion that the amount of time students spend in learning activities determines their subsequent academic achievement. It is equally obvious that time is not the only factor. American students spend aproximately 13,000 hours in school, kindergarten through twelfth grade, and yet we have ample evidence to demonstrate that many of them are not learning efficiently. For example, American high school students lag behind those of many other countries in some areas: the average Japanese high school student is better at math than 99 percent of U.S. high school students. (National Commission on Excellence in Education, 1983) Currently in California 30 percent of students do not even graduate from high school (Education Report, January, 1984), and many of the top 40 percent who enter the universities require remedial education in basic skills. (California Postsecondary Education Commission, 1983)

A. Learning: Students' Presence and Involvement

The fact is, as Denham and Lieberman(1980) point out, learning does not require merely the students' physical presence in the classroom; it demands their active involvement in the learning task. John Dewey(1966) described learning as a problem solving process that involves a "genuine situation of experience.... involvement in an activity in which the child is genuinely interested". More recently the cognitive-developmental school of psychology

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*This figure was calculated by multiplying the maximum number of new teachers, 190,000 (as estimated by Smith, 1983b), by the current pupil-teacher ratio, 20.6, by 20 years of teaching experience.

(see for example, Piaget, 1970) has demonstrated that children do not perceive or understand the world in the same way as adults. Children gradually develop logical reasoning skills. For most school age children verbal explanation is not enough; they need to interact directly with the subject matter. The science and art of teaching involves presenting the learner with materials and subject matter in a way that he or she can comprehend and that stimulates and holds attention. The job of a teacher involves doing that for groups of 20-40 individuals day after day for years..

This paper argues that the most effective way to improve educational standards in California is to improve the *quality* of the time the students spend in school and that the most efficient way to do this is to improve the quality of the teaching profession and the conditions of work. The teacher is in charge of quality control in the classroom. *Teachers do make a difference.*

B. Teacher Behavior and Pupil Progress

Two recent studies, one of elementary schools (Denham and Lieberman, 1980) and one of high schools (Rutter, 1979), provide strong evidence that it is the classroom teacher who makes the difference in the amount of time students spend actively engaged in learning. Denham and Lieberman(1980) conclude that, student ability aside, the best predictor of student progress in reading and mathematics is the kind of instruction received. The students who make the most progress have teachers who emphasize academic goals, who accurately can assess students' level of skill and provide appropriate learning tasks, who monitor student work and give feedback, and who structure the lesson and give clear directions on task procedures.

Remarkably similar findings are reported in a study, conducted over a three year period, in 12 London high schools. (Rutter, 1979) The researchers had observed that schools admitting similar populations of students (socio-economic status, ethnic background, ability level) had significantly different levels of student academic achievement. The study specifically examined the differences between the high achieving and the low achieving schools. Differences in pupil progress were accounted for by differences observed in the behaviors of classroom teachers. Physical features of the school (size and age of buildings, facilities, etc.), or administrative aegis (public or private) made no significant difference to pupils academic performance. *What really mattered was what the teachers did.* The high achieving schools had teachers who stressed academic success and who expected their students to achieve. They spent time planning lessons and their classes were structured and well organized. They frequently assigned and checked homework.*

The findings of such studies lead us to argue that the way to improve the quality of learning taking place in California schools is to improve the skills of the individuals teaching in them and the conditions under which they work. This paper seeks to address the following issues; who are our teachers, how are they prepared and how can we ensure that we retain the best teachers in the classroom?

Rutter also found that school administrators played an important role in promoting student achievement. The high achieving schools were those where the school administrators were involved with teachers in planning the curriculum and in directly supervising teachers work. In these schools, for example, the administrators checked whether teachers assigned and marked homework regularly, and they were more directly involved in day to day classroom activities. Rutter comments; "It was striking that in the less successful schools teachers often were left completely alone to plan what to teach, with little guidance or supervision from their senior colleagues and little coordination with other teachers to ensure a coherent course from year to year". (p. 133)

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III. Selecting Our Teachers

Measured by academic performance, the quality of candidates entering the teaching profession has declined. In the nineteenth century teachers' knowledge was expected to be encyclopaedic. For example, in 1897 the teachers exam in Yolo County, California, included sections on arithmetic, orthography, grammar, geography, reading, writing, literature, history, music, entomology, penmanship, physiology, physics, bookkeeping, United States Constitution, and geology. (Lane, 1972)

A.Decline in Teacher Quality

Today, relying on a liberal arts undergraduate education to provide the prospective teacher with the general educational background necessary to teach, we are embarrassed to acknowledge that approximately one-third of California's teachers are not literate or numerate (Commission on Teacher Credentialing, 1983). Instead of a population of highly literate, numerate and knowledgeable teachers, we have many teachers who cannot pass a test of basic skills in reading, writing and arithmetic (namely, the CBEST). Prospective teachers coming into the system do no better. The California State University system, which prepares 65 percent of teachers trained in the state (Morey, 1983), found in 1983 that 40 percent of their student teachers could not pass the CBEST. Failure rates ranged from 67 percent at California State University Dominguez Hills to 19 percent at Humboldt State University. (Commission on Teacher Credentialing, 1983)

This situation is not confined to California, but is a national problem. As a group undergraduates aspiring to the teaching profession now rank at the bottom of the distributions of the A.C.T. and Graduate Record Examination (G.R.E.) scores. For the five years beginning in 1976 their G.R.E. scores plummeted from 39 to 65 points below the national average. (Kirst, 1981) Prospective teachers ranked 26th in a comparison of students of 29 fields of study, using combined (math and verbal) Scholastic Aptitude Test (S.A.T.) scores as the parameter. (Schwanke, 1982) In a comparison of the G.R.E. scores of college seniors in 14 fields of concentration, education students placed 13th in math and 12th in verbal ability. (Weaver, 1976) S.N.E.A. Impact gives the following summary:

> For more than half a century teacher education has attracted the least able students; lately the situation has reached crisis proportions. Between 1972 and 1980 the average verbal scores on the Scholastic Aptitude Test among entering education majors fell from 449 to 418. The S.A.T. scores of 1980 senior education majors were 48 points below the national average in mathematics and 35 points below average in verbal skills. .... If the median S.A.T. scores for all colleges and universities were used as entrance requirements for the nations schools of education 70 percent of the applicants would not be admitted.(quoted in Andrew, 1983)

This is shocking.

B. Approving Programs, Not Persons

Most states, including California, approve *programs* not persons, and issue certificates to those persons recommended by a preparatory institution. Ever since the "approved program" route was widely established as a means of quality control, teacher candidates became eligible for certification by graduating from a program that the Commission on Teacher Credentialing deemed as meeting minimum standards. In this system the state does not make judgments about individuals, the records they present, or the skills they

possess. Instead judgments are rendered about the programs, and the programs are assigned the responsibility for making appropriate recomendations about individuals.

In other words the State of California delegates responsibility to the colleges and universities for approving the individuals admitted to the teaching profession. While a candidate might be considered less than qualified for a teaching position and still manage to pass all program requirements, rarely has such a person been denied certification.

The recent high failure rates of Californian teachers on the CBEST leads one to question the competence of the teacher preparation programs. It is hard for the public to understand how these institutions could have been recommending, for certification as teachers, individuals who were not literate or numerate.

C. Failure of the Gatekeepers

Teacher education programs in the United States traditionally have not played a significant role in preventing unqualified persons from becoming certified to teach, nor in recruiting desirable candidates into teacher education. Less than half the institutions surveyed nationwide by Lamon and Reeves (1982) had an active program of recruitment: they found few with excellent results. Watts (1980) and Brubaker (1976) observed that schools of education do not use rigorous admission criteria, generally admitting 90 percent of their applicants. Most of the teacher training programs across the nation (including the California State University system) use an undergraduate grade point average (G.P.A.), of 2.5 on a scale of 4.0 as the main academic criterion of admission. Such a criterion is no guarantee of academic adequacy. California State University Dominguez Hills, the California institution with the highest failure rate among its students on the CBEST (67 percent), uses a G.P.A of 2.5 as one of its admission criteria.

Once admitted to a teacher training program, few students fail; thus, the gate-keeping function is typically absent. Although the admission criteria are lower, the G.P.A of students in education are almost always higher than those of any other school on campus. This would imply that the intellectual rigor of education courses is reduced to the level of understanding of the less adept candidates. This condition alone would discourage the intellectually competent from seeking to become teachers or, should they persevere, from taking a full measure of pride in their profession. In a study of student teacher grades, in 34 institutions across 7 states, 79 percent of students given traditional letter grades received A and 18 percent received B (Southall, 1982).

It is not surprising then that Arizona State University found in 1978 that between 50-70 percent of the students they had admitted into the elementary school program had not mastered basic skills and concepts of arithmetic. The students could not correctly compute problems involving addition, division, fractions, decimals, and percentages. If a teacher does not know how to do long division, it is difficult to comprehend how that person may be able to teach long division to children. Indeed Arizona State, not surprisingly, found that lack of mastery in basic arithmetic has a negative effect on the teachers' ability to teach and attitudes toward teaching mathematics to children. They concluded (as any sensible person might) that students who have not mastered basic skills in arithmetic should not be allowed to teach in elementary schools.

Unfortunately, there is at present little to prevent such individuals from being admitted into teacher preparation programs. Recent legislation in California requires that students take the CBEST prior to admission to a

teacher education program. They are not, however, required to *pass* it. Until 1983, in The California State University system, only 26 percent of the teacher preparation programs tested applicants before admission for reading skills and only 42 percent for mathematical skills. (Morey, 1983)

D. States' Role and Teachers' Academic Competence

Recently a number of state legislatures have enacted laws pertaining to teacher admission standards. For example, Georgia in 1980-81 distinguished between preparation and licensure (certification) by returning to the state the direct responsibility for determining who should receive a certificate. A candidate first completes an approved teacher education program, then must pass a test in order to receive an initial teaching certificate. Lester Sulaman, the state official responsible for the new certification process, reported that 20 percent of the graduates failed the first round of testing. "We prevented 800 teachers from walking through the door to teach children without knowing the subject matter," he stated. (Feister, et al, p.31)

Since February, 1983, anyone applying for a new credential to teach in a California school must pass the CBEST, which measures reading, writing, and mathematical skills. Currently 24 states either have or plan to use teacher tests. In ten states, passing such a test is a prerequisite for admission to a teacher preparation program; in two it is a prerequisite for admission to student teaching, and in ten it is required in order to be granted a teaching credential. (Brott, 1983)

Some states are going one step further and making teacher training institutions responsible for the performance of their graduates on tests of basic skills. In an education reform bill, currently before the Tennessee legislature, a teacher training institution would be placed on one year probation if 30 percent of its students failed a basic skills test. If the failure rate is above 30 percent for two or more consecutive years, the state will revoke the program's approval. In Florida, 18 out of the 25 teacher training institutions have lost state approval of one or more of their education programs under a law that holds them responsible for their students performance on a state test of basic skills (Education Week, July 27, 1983).

Teacher testing has been criticized because there is no substantive data to link a person's test performance to teaching competence (Lutz, 1983). But the lack of such a correlation is no reason to throw out competency testing. ***Academic competence is a necessary condition of effective teaching, but it is not suffient to ensure effective teaching.*** Few would argue that a teacher does not need to be literate, numerate, and well-versed in the subject matter. Academic competence is in fact a base-line requirement, but an effective teacher *also* needs a high level of professional skill. This cannot be measured solely by a paper and pencil test, but must be assessed in its own right. In short, teachers should be evaluated both on their level of academic competence and on their level of professional skill.

In California the provisions of the Ryan Act currently offer individuals the opportunity to separate the academic and the professional facets of teacher training. An individual may be granted a preliminary credential, authorizing service for five years, upon completion of a baccalaureate degree, appropriate subject matter preparation, and student teaching. A clear credential will be granted on completion of a fifth year of study at an approved college or university after completion of a baccalaureate degree. Typically, however, individuals preparing to teach complete little if any of their professional preparation during their undergraduate years. These individuals use the fifth

year to complete the basic professional education coursework, including student teaching. Thus they proceed through the fifth year directly to the clear credential prior to their first teaching job. (Morey, 1983)

E. Exams for Teacher Candidates

This paper argues that a more effective way of preparing teachers would be to require examinations on general academic and subject matter competence before applicants are admitted to professional training. In other words this would mean that prospective teachers would have to complete their preparation in academic fields during their undergraduate years. In the *two* years following the awarding of the baccalaureate degree, teacher preparation programs would concentrate on professional preparation, that is, *how* to teach, not *what* to teach. Evaluation of the teacher candidate prior to the granting of a credential would focus on pedagogical knowledge and professional competence in the classroom.

There is support for the view that academic competence should be demonstrated prior to admission to a teacher preparation program and that professional competence should be demonstated prior to the awarding of a clear credential. The annual meeting of the American Association of Colleges of Teacher Education, held in Dallas in 1980, passed a resolution supporting a test of basic skills as a criterion for entry or continuance in teacher education programs and another supporting an assessment of professional skills as an exit requirement.

The comprehensive report **Excellence in Professional Education**, prepared by the Office of the Chancellor, the California State University system, (Morey, 1983) recommends that 1) students should demonstrate both general and subject matter competence before entry into a teacher preparation program; and 2) a clear credential should be issued only after a period of demonstrated competence as a teacher and completion of an advanced program of study. It was further recommended that the C.S.U. Schools of Education review their admission requirements for teacher preparation programs. The report recommends that students should demonstrate competency in a subject matter field and "college level proficiency in written and oral communication, mathematical computation and reasoning, and reading". It emphasizes that "completion of university-wide graduation requirements in these areas should not necessarily be assumed to be an adequate demonstration of competence for entry into professional education".

F. Entrance Requirements

It is common practice in other disciplines that students applying for graduate and professional programs must demonstrate competence in verbal, mathematical, and analytic skills, plus subject matter competence, by taking the G.R.E. It seems appropriate that a similar requirement be introduced for admission into teacher preparation programs. Thus applicants to teacher training programs would be evaluated on the same basis as applicants to other graduate programs in the university. Exams used exclusively for admission to schools of education imply status that is "special" and probably "inferior". Raising standards for entry into teacher preparation programs should be done in a way that allows direct comparison with other sections of the academic community.*

U.C. Davis requires students to have passed the CBEST prior to admission to the Teacher Education program. The Developmental Teacher Education Program at U.C., Berkeley requires candidates to have a minimum G.R.E score of 1,000 points.

There is concern that the introduction of mandatory entrance requirements for programs of teacher preparation will make it difficult for universities to attract sufficient numbers of candidates into these programs to satisfy current teacher needs. However, there is some evidence that the existence of testing programs might encourage more able students to apply and discourage less able candidates. **A Closer Look at Teacher Education** (N.E.A. Reporter, 1982) links the existence of a first-time- ever waiting list at the University of Oregon to that institution's raising of admission standards. Gallegos and Gibson (1982) suggest that an increase in the G.P.A. of teacher education students at Western Washington University As a result of self-selection following raised admission standards.

G. **RECOMMENDATION ONE: Require Demonstration of Academic and Professional Competence**

The first recommendation is that the State of California require prospective teachers to demonstrate both academic and professional sompetence before they are granted a teaching credential.

1) Academic competence in basic skills and subject matter should be demonstrated prior to admission to a fifth year professional training program.

2) Professional competence should be demonstrated before the state grants a clear credential. We recommend a two-stage credential: A temporary credential al, valid for three years, would be granted after the candidate has completed an approved training program and passed a pedagogical exam. A regular teacher credential would be granted after the successful completion of a one year supervized internship. These recommendations will be developed below.

Although there is a general move toward the use of competency tests for new teachers there is opposition to the testing of those currently employed. The American Federation of Teachers is opposed to such testing, reasoning that policies exist to remove from practise in-service teachers who are obviously deficient (Shanker and Ward, 1982). No states which have al ready adopted eacher testing laws subsume those already certified, and the proposed plan to do so in Houston Independent School Dsisrict occurs in a state where teachers do not have collective bargaining power (Education Week, 1982). One way to upgrade the skills of teachers currently enrolled is to link continuing education requirements to minimum competency requirements in basic skills and content areas and to tie those to merit increases.

IV. How Are Teachers Prepared?

A. Schools of Education

There has been little innovation in the preparation of teachers during the last 50 years. Drummond and Andrews (1980) compared current School of Education bulletins with those surveyed by E. S. Evendon between 1928-1933 and found that little has changed. They concluded that "except for a few innovative institutions, most prospective elementary school teachers still recapitulate the special methods programs of the normal school; secondary teacher candidates continue to be exposed to a pattern found in the universities circa 1930."

Two main reasons can be proposed for this lack of innovation in the training of teachers: it lies first in the failure of the schools of education to develop education as a substantive discipline; second (which may be a consequence of the first), the low status of schools of education in the university hierarchy. Schools of education have yet to develop a strong theoretical base and to identify a common core of knowledge and understanding that is basic to professional practice. They therefore have placed themselves in the ambiguous position, within the university community, of being viewed as neither a profession nor an academic discipline.

The university reward system works against clinical instruction. Universities essentially justify themselves by their contributions to accumulated knowledge and their preparation of those who wish to devote themselves to research. Naturally faculty members who prove themselves most adept at research and scholarly production garner the lion's share of recognition and financial reward. The system provides little incentive for faculty to engage in applied research or to develop innovative and experimental programs of teacher training.

There has been a tendency, therefore, to develop pedagogy as an academic rather than a clinical study. Except for student teaching (which is supervised and taught almost exclusively by public school teachers), pedagogical courses are taught by a combination of lectures and discussion, with the study of textbooks the primary learning activity. Faculty are committed to graduate study geared to erudition and ultimately to research competence, rather than to competence either in teaching or the training of teachers (Smith, 1982b).

The lack of emphasis on applied research and professional development has meant that education has not developed as a substantive discipline in its own right. There is little agreement on the content of the professional culture; consequently, there are major differences in objectives and programs among institutions:

> Even when course titles are similar, widespread differences often exist in the content, the intellectual level of instruction, and the competence required. This is true of both academic and professional courses. The result is that state requirements and teacher training institutions cannot really guarantee that teachers who have met state requirements have much training in common, know how to teach, or even know their subject.(Ornstein and Fuller, 1980)

Tenured faculty frequently are drawn from academic disciplines other than education, with no experience and limited interest in professional practice. The result is the creation of a mini-university within the larger university, given that departments of education employ doctorates in psychology (the most natural fit), sociology, political science, economics, anthropology, statistics, operations research, physics, computer programming, history, and philosophy.

But it is viewed as a renegade mini-university by the main line departments across campus. Faculties of education, holding responsibilities that are split between purely academic and purely professional spheres, find it hard to compete in either sphere successfully. Most of the applied teacher training is undertaken by lecturers or supervisors (non-tenured faculty) who have little say in the development of courses or program requirements.

Responsibility for the low standards in teacher preparation programs, however, should not devolve wholly onto schools of education. Donna Kerr (1983), after an extensive review of the teacher education literature, concludes that, "Teacher education takes place in what I call a hostile environment". Evidence to support this view can be found close to home, at the University of California, Berkeley, where the Smelser Report (1981) stated that the school of education at that institution had been subjected to a policy of "punitive starvation" by the university administration.

Judge (1982) and Sykes (1983) both point out that programs of teacher education serve a latent function within the university system which benefits other departments, but not themselves. They "serve as the dumping ground for the weakest students in the arts and sciences" (Kerr, 1983). Recent efforts to provide access to higher education for a greater proportion of the population has meant that public universities are required to admit a students of a wide range of ability. Any department that admits the least able students provides relief for other departments who oppose efforts to change this situation. Kerr found that "faculties in arts and sciences have been known to object to attempts by education faculties to raise their entrance requirements". As Sykes (1983) points out, teacher education has become an "intellectual ghetto" at many universities, "higher education's dirty little secret". He stresses that, under current circumstances, political and financial restraints prevent schools of education from changing readily.

The reputation of schools of education has become so debased that it has been proposed that teacher education be taken out of their hands. Critics such as Gene Lyons propose that the monopoly of tax-supported schools of education and their "empire of cant" be broken. He writes, "since teaching is a pragmatic art best learned by experience, school districts should establish apprenticeship programs for people who can satisfy the literacy requirements and show competence in subject matter" (Lyons, 1979). Such an option in teacher preparation, is now available in California under the provisions of Senate Bill 813. High schools may appoint as teacher trainees individuals who have not taken a fifth year of professional training. The individual to be appointed must pass basic skills and subject matter exams and the school district must provide a program of supervision from a mentor teacher (Guthrie, 1983).

Eliminating professional teacher training programs, because they are not currently satisfactory, may be viewed as 'throwing out the baby with the bath water'. If our goal is to upgrade our schools, then eliminating professional training (uneven as it may be at present) may produce worse consequences. There is evidence to indicate that the elimination of teacher preparation programs will only serve to perpetuate and institutionalize the problems in our schools. Hull, Baker, Kyle and Goad (1983) report that practical teaching experience, in isolation, may have negative effects in that it tends to socialize the student teacher into the prevailing school culture, rather than expanding their awareness of a range of teaching environments.

It is naive to expect that somebody can walk in off the street and deal effectively with the learning needs of twenty-plus complex individuals. Such a

person may be able to stand at the front of a classroom and spew forth information, but it is unlikely that the students will learn much. As we have stressed earlier, learning requires more than the mere physical presence of a teacher and students. To develop understanding and learn efficiently children need to be actively engaged in academic tasks. The effective teacher designs lessons and presents instructional materials in ways that grasp and retain students' attention.

It is time that we took teaching seriously and acknowledged that it is a complex skill requiring full professional training. We would not allow unqualified individuals to build our bridges, fill our teeth or defend us in court. Are we seriously proposing that it takes less skill to educate children in order that they may, in the future, take up these and other professions? *Teachers do not need less training or no training at all, they need an extended and more rigorous training*. We must insist that schools of education focus their efforts on the improvement of pedagogy and the professional training of teachers. In recent years there have been significant advances in our understanding of the teaching/learning process. The challenge is to apply such knowledge to the professional development of teachers. Smith (1980a) summarizes the problem:

> While we do not know the cause(s) of learning, we do know the conditions of learning both in and outside of the classroom. The general outlines of human development have been discovered and we are beginning to learn the effects of some environmental factors upon human potentials. We know how to identify many obstacles to learning, particularly in reading and mathematics, and how to help learners cope with them. Our knowledge of exceptionality and how to provide for it is considerable and increasing. While our knowledge of social and emotional development is more fragile than our knowledge of cognitive development, still much progress has been made in the procedures and techniques of promoting effective growth in the classroom. *The problem of pedagogical education is not the lack of knowledge so much as the lack of will to institutionalize an effective program of pedagogical education. (* emphasis added)

B. The Link Between the Schools of Education and School Districts

During the 1960s a high priority was placed on pedagogical education. The link between schools and universities was strong, especially in math and the sciences. Unfortunately, the tie has since diminished, and is indeed weak today. As Gifford and Seaborg observe, faculties of education have tended to respond to the problem of "presumed congenital prestige deprivation" by distancing themselves from the problems experienced by teachers and administrators in the public schools(Gifford and Seaborg, 1983). This estrangement has added significantly to the problems of public schools in two senses: on the one hand the schools are deprived of valuable services provided by the researchers of the universities; on the other they receive the message that universities really have little to say about schools and teaching.

If we argue that the highest priority of schools of education should be pedagogical, that is, teaching teachers to teach, one of the most effective means of fulfilling that mission is to reforge the links between universities and schools by providing educational services to school personnel. Genuine partnerships should be reestablished for the purpose of school improvement; schools of education can and should lead a major analysis of educational problems, incorporation of research with instructional practice, and sponsoring continuing educational forums for practicing teachers and administrators.

Schools of education are in a unique position to facilitate the communication between teachers and university academic departments. Gifford (1983) argues that one of the major factors in the current shortage of qualified teachers is "the prospect every beginning science or mathematics teacher faces, of being cut off from new disciplinary developments and breakthroughs within a few years after entering classroom service". Those teachers who are genuinely concerned about becoming intellectually isolated from the latest subject matter may be those who are most likely to leave teaching after a relatively short time. These are the individuals who must be retained in the public schools.

Universities can contribute to resolving this problem through summer institutes on campus for practicing teachers. By coordinating with the academic departments on campus, especially in math and science, substantive courses could keep the teachers up-to-date on the latest body of knowledge and research. The same can be provided in other subject areas as well. However, let us caution that these courses not be designated as "science for teachers" or a similar rubric that conveys the idea of inferiority. The universities have the resources to provide substantive and academically rich continuous education for practicing teachers. To use these resources in a cooperative effort is to make a very direct contribution to the increased quality of instruction in the public schools.

C. **RECOMMENDATION TWO: The State of California should encourage a basic restructuring of schools of education**

The second recommendation is that the state encourage the restructuring of the schools of education in as fundamental a way as medical schools were restructured at the turn of the century, as a result of the Flexner Report. The primary mission of the restructured institutions should be the following:

i) instruction, including practical experience, in pedagogy;

ii) developing new knowledge about teaching/learning processes under programs of research that are both short and long-term; and

iii) taking a leadership role in the continuous education of practicing teachers by sponsoring summer institutes in collaboration with the relevant academic departments on campus.

Members of the education faculty whose professional interests are inconsistent with this mission should be shifted to other departments or units (for example, the faculty who work in administration and policy analysis should be grouped together with their peers from other professional schools serving the public sector, in a program of public sector management). New faculty should be hired to strengthen the primary mission, and promotional policies should be modified to give due credit for practical and effective work in improving local schools.

We recognize that some readers may find these recommendations unusual, especially in light of the criticisms we have made of departments of education as they exist today. We cannot emphasize too strongly that we are proposing an entirely different kind of institution that would be designed from the ground up to meet high standards of intellectual rigor. As we explain in the succeeding section, the complexity of teaching, so little recognized until now, requires the service of the best minds. Any other attempt to meet the "crisis in education" is patchwork that will not avail.

D. Professional Education

Teachers do not now receive a fully professional education, that is, such courses as theory, principles, and methods of teaching and learning, and their preparation is not comparable in length or rigor to that of most recognized professions. Teaching has less time allocated to strictly professional studies, the lowest proportion of credit hours allocated to the professional aspects of the program, of any profession or semi-profession. (Denemark and Nutter, 1979) In the bicentennial volume of the American Association of Colleges of Teacher Education (1976), it was concluded that nationally the professional education component makes up just 13 percent of a program for prospective secondary school teachers and only slightly more for elementary school teachers. Stinnet (1974) reported that ten states permitted the certification of elementary school teachers with only 18 semester units of professional education.

Kerr (1983) found that preparation for teaching at the elementary school level requires only "six or seven methods courses for reading, social studies, math, science, and art or music". Preparation for secondary school teaching covers "some sort of introduction to education, either educational psychology or sometimes adolescent psychology, a general methods course, and a subject-specific methods course in the student's specialty". About six weeks of student teaching completes the training. Kerr also found that while other professions had extended their period of training over the last 50 years to accommodate expanded knowledge, the proportion of teacher preparation devoted to professional studies had actually decreased.

California's current teacher credentialing statute, the Ryan Act, severely limits both the overall length of professional training and the amount of pedagogical preparation a student receives. As a consequence, student teachers enter the classroom with a *maximum* of nine units in professional education. On the average, fully credentialed teachers have devoted only 10 , oc theipercenf total academic preparation to pedagogical studies and an additional 10 percent to student teaching (Morey, 1983). "Excellence in Professional Education"(Morey, 1983) emphasizes that this is simply not enough. This same concern was also voiced by a number of California teacher-educators, in both public and private institutions, visited by the authors in late 1983.

A growing body of literature makes the case for extending the length of teacher preparation programs (Cogan, 1975; Denemark and Nutter, 1980; Stark, 1980; Gideonse, 1982). For example, Cogan argues for three full years of post-baccalaureate study, supervised teaching practice and supervised internship. In 1976, the A.A.C.T.E. Commission on Education for the Profession of Teaching called for five years of teacher preparation, including a bachelor's and master's degree, plus a sixth year of supervised internship. As we continue to discuss the content of professional training programs, it will become apparent why such programs need to be extended.

E. Content of Professional Education

Currently in California teacher preparation is based on the 'Competency Based Model'. This model assumes that teaching can be subdivided into a number of discrete professional behaviors, each of which must be mastered by students of teacher training programs, and that this basic set of skills can be applied in all teaching situations. This is an appealing assumptiond, for discrete skills can be taught quickly and cheaply, but it is also faulty. Discrete skills without knowledge of theory do not provide an adequate basis for the kind of complex decision-making required of teachers. For example, a lawyer needs to be a good questioner, but would hardly be considered professionally

competent without a sound background in the law. Teaching relates to children, their learning processes and ways of facilitating their learning.

A study of the Educational Testing Service (E.T.S.) conducted in 43 California elementary schools demonstrated that the most effective teachers vary the method or style of teaching to fit both the characteristics of the student and the subject matter of the lesson (McDonald, 1975a). Teachers are constantly required to make instructional decisions that should evolve from a comprehensive understanding of children's cognitive and social development, principles of learning, and the application of such knowledge to teaching in a particular subject matter area. This involves not only a sound knowledge base, but also the development of a number of sophisticated clinical skills to enable the teacher to make the correct instructional decisions.

If our schools are to serve a diverse population, teachers need to be prepared comprehensively to accommodate the needs of children of all levels of ability, background and interests. Ammon (1982) points out that;

> Much of the instruction offered in today's schools does not deal effectively with the diversity of student needs found in most classrooms. Despite the lip service generally paid to such notions as developmental readiness and individual differences, the fact remains that many instructional programs assume that most students can learn the same things at the same time through the same method of instruction, with the consequence that *many students are expected to attain inappropiate objectives, or to learn from inappropriate methods*. Teacher training programs do not prepare teachers to fit instructional techniques to their students' needs. The teacher not only needs to be able to assess the learning status of students, but also to have understanding of the demands a particular instructional activity will make on the learner, along with ways of assessing the learner's current ability to meet such demands". (emphasis added)

Evidence to suport Ammon's view can be found in the literature on effective teaching (American Educational Research Association Symposium on Research in Teacher Education, 1971; Gideonse, 1982; Haisley, Gilberts and Kehl, 1983; Lakin and Reynolds, 1983). Such studies agree that effective teaching relies on the teachers knowledge and understanding of developing individuals and the ability to translate such knowledge into appropriate instructional activities. A common core of teacher characteristics have been found to be related to improved student achievement. Among these are:

The teacher accurately diagnoses students' level of skill and prescribes appropriate learning tasks.

The teacher varies instructional style and methods to match the characteristics of the learner and the characteristics of the subject matter.

The teacher monitors student progress and gives feedback.

The teacher structures the lesson and gives clear instructions on task procedures.

F. Psychological Theory and Educational Practice

Psychology has now reached the stage where knowledge about development and learning can begin to form the basis for pedagogy. The "cognitive revolution" has demonstrated that the way individuals process new information and the methods they employ to learn depend on characteristic ways of knowing. These are related both to developmental status and to the individual characteristics of the learner. A large body of evidence (for example: Bruner, 1966; Case, 1978; Piaget, 1970) demonstrates that there are

developmental changes in the way individuals understand the world. These changes extend from infancy through adulthood. All teachers, K-12th grade, need to understand the course of such developmental and individual differences if they are to teach effectively; since there is always variability within a given age group, the teacher needs to be able to assess the needs of individuals and teach accordingly.*

The primary task of the teacher is to bridge the gap between the world of the child and the world of the adult. Children and adolescents are not just less experienced versions of the adult end product; they are different in kind. Children do not view or experience the world in the same way as adults, the most significant difference lies in the nature of their understanding. As children develop, their ability to reason develops also. Each level of reasoning represents a different organization of experience, information and knowledge, and each leads in turn to a different view of the world (Piaget, 1970). Children will transform what is taught to them in a way that fits their rules for making sense of the world. The effective teacher is able to view what happens in the classroom through the eyes of the child and design instruction that will be interpreted appropriately and meaningfully by each student in the class.

It is important for teachers to understand the methods children employ to learn about their world. Children are empiricists; they develop understanding by conducting their own experiments. Piaget (1970) has emphasized the importance of what children learn by their own actions over what they are taught: "Each time one prematurely teaches a child something he could have dicovered for himself, the child is kept from inventing it and consequently from understanding it completely" (p.715). This is true for students of all ages, but the type of experimentation used will depend the individual's level of cognitive development.

G. Developing a Science of Instruction

A science of instruction requires the integration of knowledge about learning and development with an understanding of the characteristics and demands of specific subject matter areas. For example, to develop effective teaching programs in mathematics, knowledge needs to drawn from *both* psychology and mathematics. The mathematician establishes the subject matter and the psychologist brings to the venture the knowledge of how children develop an understanding of mathematical concepts. Knowledge of psychology or of subject matter, each in isolation, is not sufficient. A sophisticated integration of knowledge from both fields is necessary.

We are not suggesting that a fully elaborated set of pedagogical practices has been developed, but that there is a body of knowledge from which it can soon be developed. The task is to identify and integrate those concepts that can be systematically linked to the teaching/learning process and begin to develop a science of instruction. This will require a much stonger emphasis on applied research than is currently in vogue and will rely on the reform of the schools of education along the lines we described earlier. In a reciprocal interaction, theory can inform practice and practice can inform and modify theory. This will require the development of a much closer relationship between the University researcher and the classroom teacher.

Below we give an example of how cognitive developmental theory can be used to inform practice. Other bodies of theory can be systematically applied and extended in a similar way. The Developmental Teacher Education

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*Small class size and optimal teaching conditions will facilitate this.

Program*, based at the University of California, Berkeley, emphasizes the systematic study of cognitive development as a basis of teaching in the training of elementary school teachers. (Ammon, 1982) In the first year of the program students focus on understanding the processes of children's cognitive development; in the second year this knowledge is applied to the teaching of specific subject matter areas, mathematics, reading and language, science, and social studies.

Cognitive developmental theory has also been widely used in the development of curriculum. The Nuffield Mathematics program in England (e.g., 1967; 1970; 1972) provides teachers with both conceptual principles (based on an understanding of children's cognitive development) and concrete examples from which to generate a series of mathematics activities from elementary through high school. The Science Curriculum Improvement program based at the Lawrence Hall of Science, University of California, Berkeley, (Karplus and Thier, 1967) has developed a number of study units for use in elementary schools.

By systematically applying a body of theory in the training of teachers and in the development of curriculum, we can begin to develop a pedagogy that is testable. Theory used to inform instruction must pass the test of classroom practice.

H. Cognitive Development and Education

Beginning in the 1940s and continuing to the present a large body of research, stimulated by the work of Jean Piaget, (see, for example, Piaget, 1970) has investigated the development of intellectual and scientific concepts in children (e.g. space, time, number, geometry). This research has demonstrated that the most significant intellectual differences between children and adults lies in the nature of their understanding. As children develop, their level of conceptual understanding develops also. Each level represents a different organization of experience, information, and knowledge, and each leads to a very different view of the world.

Until about age seven the child's reasoning is dominated by immediate perception; if the appearance of an object changes, then in the child's view the object has changed as well. Hence the tendency of the young child to take the evidence of his or her own eyes over the logical explanation offered by the teacher. Children begin to develop an understanding of the properties and limitations of objects by actively manipulating them and observing the consequences. For example, in order to understand the concept of "six", the young child needs to sort, handle, and otherwise manipulate different groups of objects representing "six", and learn that "six" is not an object in itself, but a term which describes a particular set of class and order relationships.

In middle childhood, children develop mental operations which allow flexible thinking. Thought is no longer tied to immediate perception because children are developing logical structures and a system of rules that allow them to go beyond the immediate stimulus and perform mental operations. During this period children begin to construct stable hierarchies of classes and relations, to conserve quantity and number, and to reason about some aspects of space, time and causality. Although such thought processes show a new logical-mathematical sophistication, the child is still bound by concrete reality:

The Developmental Teacher Education Program is an experimental teacher training program which also incorporates a systematic program of research into the development of teachers.

he or she is unable to reason about events that do not actually occur. This has important implications from middle school onwards, where lessons often taught by the lecture/text book method with little use of direct experience. To develop understanding it is important to link subject matter to some facet of the individual's experience. Cowan (1978) discusses the problem:

> I despair when I see teachers expecting children to comprehend history and geography lessons about other people who live at different times or places, who exist within different social, geographical, or political contexts. Even at the early concrete operational stage children are having difficulty with space and time concepts. Their fundamental egocentricism makes it difficult for them to understand that people lived in different historical periods, under different conditions. (p.241)

He suggests that the way to overcome these problems is to start by asking children to trace their own history and the history of their families before other people and events are studied. This approach to history promotes movement from action to contemplation, from present to past, and from personal to general. Students are engaging in operations concerning time-sequencing, causal explanations, perspective-taking, communication and so on. They are developing problem-solving skills, which they can generalize to other situations. Such teaching encourages children to use their own powers of reasoning in learning. In contrast to this, the lecture/textbook approach relies on rote-learning and memorization; it pays little attention to the student's own ability to reason and does not develop the student's ability to think independently.

Beginning at about 12 years of age, the capacity to reason begins to mature. Such development represents the beginnings of truly scientific thought, in the form of hypothesis testing. The cognitive processes become "formalized," in the sense that they become detatched from the concrete material in which they originate. In this stage the individual begins to deal with second-order operations, i.e., to deal not only with the events of the real world but with all possible events. Many high school teachers assume that students are already capable of abstraction and can deal with material presented in the form of abstact concepts, for example, a lecture on algebra or taxonomy in biology. Unfortunately, only about one-third of the high school population have achieved formal operations (Cowan, 1978). Consequently, much of what is said goes over the heads of the majority of students. This fact alone may explain why so many high school students have difficulty with science and mathematics; most still need to interact more directly with the subject matter. Biology, for example, frequently requires the students to memorize the taxonomy and classification of organisms. Students will learn and understand this subject matter more effectively if they observe and collect organisms in their natural habitats, and then sort them into subsets. If allowed, they will invent their own system of taxonomy and in the process will make discoveries about the nature of taxonomic methods. Renner and Stafford (1972) stress that the "inquiry and discovery" method of teaching must go beyond the discovery of answers that the teacher knew at the beginning of the lesson.

In the taxonomy example the goal is not to recreate the classification scheme for traditional biology, but rather to construct a scheme for organizing scientific observations. These and other researchers have shown that significant gains can be made in the scientific understanding of junior high and high school students if concepts are presented at the concrete level. In laboratory experiments not always involving extensive equipment, students

learned to collect data, discuss ideas, and test hypotheses. Textbooks have been found to be minimally useful and direct manipulation of materials maximally useful in helping students arrive at their own understanding of the scientific discipline and the concepts within it. No matter what their level of sophistication, new subject matter probably will be learned better by the majority of students if they are given the opportunity to manipulate concrete examples and models and to operate mentally on the material to be learned (Cowan, 1978).

I. Applying Theoretical Knowledge to Practice

The work of the teacher is made even more complex by the fact that students in any one class will manifest both developmental and individual differences. In order to be effective, the teacher not only must understand the processes of child development and learning, but also be able to translate this knowledge into instruction that meets the needs of each individual in the group. The development of such knowledge and the skill to apply it takes time. The Developmental Teacher Education Program has found that this process takes at least two years (Ammon, 1982).

In the Developmental Teacher Education Program, the first year is devoted to developing student teachers' understanding of child development, and the second year to helping them apply this knowledge to classroom instruction in specific subject matter areas. After reviewing over 200 studies on teacher preparation, Joyce and Showers (1983) conclude that all the following steps are necessary for the succesful transfer of training to classroom practice: study of theory, observation and demonstration, and teaching practice with feedback and coaching. Educating student teachers to the level where they can begin to be effective in the classroom takes time and requires extensive training and supervision.

J. RECOMMENDATION THREE: Teacher Preparation and Certification Should be Restructured

The third recommendation is that programs of teacher preparation and the process of certification should be restructured:

i) Programs of teacher preparation should be lengthened to allow time for the development of a thorough understanding of the interaction of children's learning and development with the characteristics and demands of specific subject matter areas, and the development of skills to apply this understanding to classroom instruction. We recommend two years of post-baccalaureate study culminating in a masters degree. By the end of a program of teacher preparation student teachers should have developed the following and demonstrate that they can apply it to classroom instruction:

Knowledge and understanding of:

child development and learning;*

the characteristics and demands of specific subject matter areas;*

the relationship between specific subject matter content and the development of children's thinking;

The preparation of elementary and high school teachers would differ. Elementary school teachers would focus on learning and development in individuals four through thirteen years, in a range of subject matter areas including reading, writing, mathematics, and science. High school teachers would focus on learning and development, in individuals nine through twenty years of age, in two complimentary subject matter areas such as mathematics and a physical science.

the relationship between the diverse characteristics of learners and different instructional strategies;

the characteristics specific subject matter areas and the different methods and styles of presentation; and

the demonstrated ability to apply such knowledge to classroom instruction.

ii) An adequate provision of fellowships and forgiveable loans should be made to attract able students to enroll in these extended programs.

iii) The decision to grant an initial teaching credential should be taken out of the hands of the schools of education and returned to the state. In order to be granted a provisional teaching credential, an individual would be required to complete a program of teacher preparation and pass a professional teachers' exam established and administered by a state body created for this purpose. The following section addresses this issue.

K. Professional Teachers' Exam

Assuming that the concept of a professional evaluation for teachers is both feasible and acceptable, what form would it take? There is much of value to be gleaned from examining the practices of other professions. Medicine requires evaluation both of the knowledge of medicine as an academic study and of the clinical skills used skills in applying that knowledge. The former is tested throughout medical school and also by the state when the applicant seeks a license to practice medicine; the latter by a professional practicum, which is evaluated during the first three years of graduate experience, during internship and residency. Having passed all of these hurdles successfully, the young physician obtains a license to practice and proceeds to hang out his/her shingle. The legal profession requires a written test, the bar exam, as a measure of professional competence. The current bar exam contains six essay questions, each of which is read and scored by a different reader, and a multiple choice section. The exam is scored by practicing lawyers who passed the bar on their first attempt with high scores and are selected on the basis of their experience in the legal profession. They are paid approximately $1700 per examination. This fee covers writing a legal analysis of an assigned question, attendance at three "calibration" meetings (to ensure standardization of scoring among all readers), and a set remuneration for each question book graded. (Smith, 1983a) The cost of this process is subsidized by applicant fees, which range from $283 for a recent California graduate taking the exam for the first time to $415 for practicing attorneys from out of state.

We propose that the state institute a professional teachers' exam modeled on the state bar exam. Candidates would be required to achieve a passing grade, after completing formal professional training, in order to receive a provisional teaching credential. The exam would test candidates' knowledge of the theory and practice of the teaching/learning process. Four main content areas would be covered: child development, theories of teaching/learning, the relevant application of a variety of instructional methods in the context of specific subject matter areas(with obvious differences for elementary and high school levels), and curriculum development. The exam would consist of six essay questions based on real-life school situations, in which the candidate would be required to make and justify instructional decisions.

The test would be read and evaluated by a cadre of mentor teachers, invited to join a special commission established for this purpose and selected for their experience and expertise as instructors and educators. At least three mentor teachers would read any given test and score it independently; the

composite score would determine whether or not the candidate is recommended to the state for certification as a teacher. The recommendation would come from the mentor teachers who read the exams, not from the teacher training institution that prepares the prospective teacher. Reading of the written exams would be undertaken during the school summer vacation thus, providing professionally related summer employment for the selected group. By involving mentor teachers in the process of teacher certification, we will give the teaching profession what other professions have achieved: the responsibility and privilege of governing their own ranks.

L. The Transition Into Teaching

Under current teacher preparation in California, pedagogical training is considered complete at the end of a one-year program. At that time the student-teacher is considered to be fully qualified and capable of handling the diverse responsibilities of classroom instruction. Once again teaching is out of step: no other profession allows novices to accept so much responsibility without more practice and on-the-job supervision. No other profession expects beginners to work at the same tasks and at the same level as their more experienced colleagues (Hunt, 1968). Most professions, e.g., medicine, social work, and clinical psychology, require that new entrants undergo a period of supervised internship after graduating from a professional training program. An airline pilot flies as co-pilot for a number of years under the supervision of a senior pilot, before being given command of an aircraft. Teaching is no less demanding than any of these other professions and does not require less training and supervision to achieve excellence.

We cannot emphasize enough the complexity of the job of teaching. It may take a teacher several years to develop the skills needed to deal on a daily basis with the learning and social needs of a group of developing individuals. Even a relatively homogenous group of children exhibit a wide range in ability and developmental status. Over a full year an individual's skills and abilities can also change rapidly. As we have discussed above, the effective teacher gears instruction to meet the needs of all the students in the group. This requires that the teacher know each individual student, be able to assess his/her learning status, and prescribe appropriate learning tasks. In addition to this, the beginning teacher has to organize the classroom, manage student behavior, and interact with school administrators and parents. No wonder most new teachers go through their first weeks in teaching in a state closely approaching panic (Lortie, 1975).

The problems new teachers encounter are comprehensively documented in a report of the Educational Testing Service (Elias and McDonald, 1982). The fears of beginning teachers revolve around facing a class, their job performance and a sense of isolation. Many new teachers report feeling inadequate to the task of teaching. Working in relative isolation, as teachers do, exacerbates the situation. Most new teachers are reluctant to seek assistance because they feel that to do so would be an admission of incompetence. Being alone with their students for the major portion of the day, they must rely on their own judgment for measuring the quality of their work. E.T.S. found that, unless a structure is established within the school whereby an experienced teacher is assigned to assist the new teacher, little help is forthcoming. The report concludes that intensive supervision within the first difficult months of teaching is the best way to integrate new teachers smoothly into the job.

The University of Oregon, Resident Teacher Masters Program (Haisley, Gilberts, and Kehl, 1983) provides newly-qualified teachers with a full year of intensive supervision and support from a "Curriculum Associate" (an experienced teacher) in the same school. The Curriculum Associate helps the novice to plan the curriculum and develop lessons, organize the classroom, monitor and evaluate student learning, and generally is available to assist with any and all problems associated with the classroom. The Curriculum Associate also observes and evaluates the novice teacher and gives feedback and coaching. This program has been effective. In fact, 75 percent of the Resident Teachers were appointed to permanent teaching positions in the districts in which they interned. The results of an independent follow-up study indicate that at the end of three years of teaching, the teacher interns were more competent in diagnosis, planning and instruction than a similar group who had not gone through a supervised internship (Kehl, 1981). A similar program at the University of New Hampshire has reported that 90 percent of its graduates have teaching positions. There are also fewer dropouts from teaching among this group, in contrast to the high dropout rate that is reported throughout the rest of the country (Haisley, Gilberts and Kehl, 1983).

M. Supervised Internship

Georgia, South Carolina, Oklahoma and Florida have implemented supervision programs for beginning teachers.* In all four states a provisional teaching certificate is issued on the basis of three prerequisites: 1) a baccalaureate degree; 2) completion of a teacher training program; 3) passing grades on a state administered test of basic skills and professional knowledge. Full certification is issued upon the recommendation of a professional team that observes the beginning teacher during the first year(s) of teaching. At the end of the first year committee members decide to certify, *not* to certify, or to recommend that the teacher complete a second year in the supervised program. In each state, educators at every level were involved in the design of their state's entry-year program. The state prescribes a common design, and the school districts administer the entry-assistance program for beginning teachers.

The beginning teacher is assigned a support team of three. The team in South Carolina is composed of three specially trained trained district representatives.s0 In other states the team includes the school principal or other administrator, a teacher experienced at the grade level or in the subject area of the beginning teacher, and a third person. This may be a Regional Assessment Center representative in Georgia, a district coordinator or supervisor or other person at the same level in Florida, and a teacher educator from a nearby institution of education in Oklahoma. Team members typically observe the beginning teacher a minimum of three times a year, using a "generic" teaching skills list prepared by professionals, including teacher educators, in the state. In conference with the beginning teacher, team members specify areas of deficiency and write professional development plans. If the development plan prescribes areas that need improvement, the teacher receives help from a regional representative, a consultant, a peer teacher, or a district training program.

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*The following description of these programs is taken from a planning document on teacher preperation programs prepared by the University of Oregon, College of Education (Haisley, Gilberts, and Kehl, 1983).

N. **RECOMMENDATION FOUR: A California State Teaching Internship Program**

The fourth recommendation is that the State of California establish a teaching-intern supervision program along similar lines to those described above. We offer the following suggestions:

i) Beginning teachers need intensive support and feedback in the early weeks and months of teaching. We recommend that beginning teachers be assigned a mentor teacher, preferably in the same school, who would give daily or weekly supervision. The mentor teacher would be given release time for such supervision, as per SB 813.

ii) Cooperation between university and school district personnel is imperative for introducing beginning teachers into the system effectively. Any internship model developed in California should be based on a collaboration between the school districts and the schools of education. We see the relationship as reciprocal. School District personnel would be appointed as clinical professors in schools of education (in a joint appointment between the school district and university) to organize the internship program and collaborate with university faculty on organizing problem-focused seminars for the beginning teachers. The schools of education, in turn, would train the mentor teachers in supervisory skills.

iii) The evaluation team would consist of the supervising mentor teacher, a school district administrator and a school of education faculty member.

V. Retaining Good Teachers in the Classroom

We have argued that raising certification standards will improve the quality of new candidates entering the teaching profession. However we will not retain such individuals unless teaching is made more attractive as a long-term career. Teaching has a high turn-over rate: only 40 percent of new teachers remain in the profession after their fifth year. (Charters, 1970) Even more worrisome is the fact that many of the most academically able teachers tend to leave. Those who score high in mathematical reasoning are particularly likely to reject the teaching profession. This pattern tends to hold regardless of the race or sex of teachers. (Shlechty and Vance, 1982)

These figures are not surprising: teaching is no longer a desirable profession. In the last ten years public school teaching has suffered a greater loss of prestige than any other profession. (N.E.A., 1981) Parents no longer encourage their children to enter teaching (Gallup, 1982); enrollments in programs of teacher preparation have declined (Sykes, 1983); and more than 40 percent of those currently employed as teachers say they would no longer choose to enter the profession. (N.E.A. Reporter, 1982) In addition teaching is losing the best and brightest of the women and minorities, who used to be the profession's mainstay, now that other careers are open to these groups. In a 1979 Harris Poll, teaching finished last among a choice of occupations as a field in which to achieve security and make money. The factors that have contributed to this situation have been adequately documented elsewhere. (see, for example, Lortie, 1975; Smith, 1983b). This section addresses what appear to be the most pressing and immediate issues.

A. Salaries

Teachers' salaries do not compare favorably with those of other professions. In California the average teacher earns approximately $22,755 per annum, 20 percent less than a social worker and 40 percent less than an engineer. (N.E.A. Reporter, 1982) Until the recent salary increase mandated in Senate Bill 813, the average starting salary for a California public school teacher was $13,000. An individual with an undergraduate math or science major* entering industry is likely to be offered a starting salary of $20,000, and with a Masters degree in engineering or an M.B.A. a person could expect as high as $25-30,000 (Guthrie and Zusman, 1982). In three years time entry-level salary for California teachers will be $18,000, but this will not restore them to their more favorable 1970 position (Guthrie, 1983). Teachers' salaries have declined 12 percent in real purchasing power between 1971-1980, and the decline appears to be continuing and accelerating (Guthrie and Zusman, 1982). Worse still, the salary structure offers no incentive to stay in teaching.

As Lortie (1975) points out, teacher income structures are "front-loaded", entry-level salaries being high in relation to the long-term financial rewards of teaching. Over the years each pay increase represents a smaller percentage of the base salary. ***The rewards actually decrease with experience.*** Most teachers have reached the top of the salary scale by age 35 (Guthrie, 1983). Smith (1983b) points out "For approximately 63% of California's teachers who have more than ten years of educational service there is no opportunity for salary growth, other than inflationary increases and periodic tenure bonuses provided by a limited number of school districts, unless they leave the profession or go into school administration. After ten years of moving up many of them move out" (Smith, 1983b).

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*There is a severe shortage of math and science teachers in California. Los Angeles Unified School District alone needed 600 math teachers in 1983 (Guthrie and Zusman, 1982). 50 percent of math classes in high schools in California, and 72 percent in junior high schools,

B. Career Structure

Teaching lack an adequate career structure. In terms of classroom activities and responsibilities, the 20-year veteran is indistinguishable from the raw recruit. Talented young teachers look ahead and see relatively little opportunity for long term professional development. Teaching is one of the few professions that does not allow for change in the type of work activities as a function of experience. There is little in the system which gives the teacher a sense of advancement or moving up. The door to advancement is marked "EXIT" for the classroom teacher.

The way to become a professional leader is to become an administrator. Classroom teachers, regardless of experience, feel they have little influence or control outside of their classrooms (Lightfoot, 1983), and in fact are generally excluded from the decision making processes of the school (Griffiths, 1983). Indeed, in recent years there have been increasing attempts to take control away from the teacher within the classroom. As Sykes (1983) points out the tendency toward "legislated learning" has brought into use "tests to insure teacher accountability, the development of 'teacher-proof' curriculum, instructional management systems, competency-based teacher education, management by objectives, and the like", all of which serve to erode teachers' view of themselves as competent professionals.

To add insult to injury, in recent years, teachers have not even had job security. It is common practice in California for school districts to send layoff notices to large numbers of teachers on May 15th. Many are rescinded by the end of August, but even so teachers, with families to support and heavy financial commitment, spend their summer vacation worrying about whether or not they will have a job the following year. It also means that, in many instances, teachers are not given new job assignments until the new school year has begun and have no time to prepare for them.

Given these facts, it is surprising that we have any teachers at all. Fortunately many individuals are still attracted to the profession for altruistic and idealistic reasons. Most are motivated by the desire to work with young people, a genuine interest in the subject matter, and the opportunity to make a significant contribution to society (Smith, 1983b). By offering such individuals a satisfying and rewarding professional career, we will not only attract able candidates, but will retain them in the classroom. In order to do this, however, we need to restructure both salaries and career advancement opportunities.

C. RECOMMENDATION FIVE: A System of Salary Increases and Career Advancement

The state should develop a system of interrelated salary increases and career advancement levels that rewards both excellence and experience, and that retains the most able teachers in the classroom. To demand greater rigor in professional preparation in the absence of such career enhancement will blunt the drive for teacher competence. Today there is an increasing public

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are taught by teachers with less than a minor in mathematics (California Science Teachers Association, 1982, cited in Gifford and Seaborg, 1983). This situation is unlikely to improve in the near future. Guthrie and Zusman (1982) report that in 1982 the total number of students, enrolled in math and science teacher preparation programs in California, was 371. In that same year, they estimate, 2,200 math or science teachers resigned from California schools. In 1981 over 50 percent of math and science graduates who were qualified to teach chose to go into industry instead (Institute for School Development, 1983). As Guthrie and Zusman point out, the salaries and career opportunities offered to math and science graduates in teaching cannot match those offered by industry.

awareness that the education profession needs revitalization, along with the willingness to make the necessary financial investment to begin the process. The following will provide a guide to our suggestions:

i) **Teacher Salaries:** the improvement of teacher salaries mandated in Senate Bill 813 should be strengthened and improved annually up to levels at which neither talented entry-level candidates nor experienced teachers are driven to seek other kinds of work solely for financial reasons.

ii) **Career Structure:** a structure of career advancement for classroom teachers should be established, based on the academic or civil service models. Progress should be based on qualifications, experience, and excellence in teaching. Each level would have its own salary increment and professional development requirements, but additional salary raises and increased professional responsibilities and privileges would depend on promotion to the next higher level.

We suggest four levels or grades of teacher: intern, teacher, specialist teacher and mentor teacher. The career structure should be diversified to allow the able and experienced classroom teacher to play a more influential role in the profession.

a) **Intern:** The nature of this position is described above. Internships bring the preparation and development of the teacher's skills into the context of the work place. Upon successful completion of the internship, a clear teaching credential is awarded.

b) **Teacher:** This is the first fully certificated stage of a teacher's career. Persons are expected to accumulate experience at this level, eventually mastering both the theoretical and applied aspects of teaching. Teachers are responsible for the day-to-day conduct of classroom activities, aside from specialized types of instruction.

The next two promotional categories are designed to encourage experienced teachers to remain in the classroom, to use their skills to improve instruction and to act as professional leaders.

c) **Specialist teacher:** the specialist teacher would be based in a school and play a leadership role in the instruction of designated subject matter areas. Specialist teachers would act as change agents and initiate program improvement from within the school. They would be appointed in subject matter areas, such as math, science, or writing, and would assist teachers to upgrade instruction in these areas. In addition to some teaching responsibilities, he or she would work with individual teachers in the planning and teaching of lessons, act as a resource person in the upgrading of new knowledge and developments, and serve as a liaison between relevant outside agencies, such as academic departments in universities, museums, and governmental agencies. To be appointed a specialist teacher, an individual should have demonstrated superior classroom teaching skills and have successfully completed an appropriate advanced degree.

There is a great need for math specialists in both elementary and high schools. (Gifford and Seaborg, 1983) Currently, no California university offers an advanced specialist credential in the teaching of math. Upgrading the teaching of math requires that math specialist credential programs be instituted and the graduates thereof be appointed to math specialist teacher positions in elementary and high schools.

d) **Mentor Teachers:** The mentor teacher provisions of Senate Bill 813 should be expanded to make "mentor teacher" a promotional category. Mentor teachers should be identified as professional leaders who would be involved in both pre-

service and in-service teacher education and in monitoring professional standards. We envision mentor teachers being closely involved in the teacher credentialing process: they would score the professional teachers exam, would serve as supervising teachers for the internship requirement prior to certification, and would be part of the state evaluation team which would assess the intern and recommend whether or not the candidate should be granted a clear credential. Mentor teachers should be closely involved with programs of teacher preparation. We suggest that the most outstanding mentor teachers be offered short-term (e.g., three years) appointments as clinical professors in schools of education. Such appointments would be jointly funded by the university and the school district.

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